Introduction to Databases, ITU, Fall 2004

Rasmus Pagh

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Exercises on October 1

You are unlikely to be able to do all the exercises in two hours. Therefore you are encouraged to prepare at home, and use the exercises for those parts you find difficult.

1. GUW 3.4.2. Use the method described at the lecture to find all nonreducible FDs.

2. GUW 3.4.1 considers the following relation schema:

   ```
   People(name, ssn, street, city, state, zip, areacode, phone)
   ```

   Assume that a zip code corresponds to a unique area code, and that an area code corresponds to a unique state.

   (a) Use the method described at the lecture to find all nonreducible FDs.
   (b) Construct a relation instance exhibiting redundancy, update anomalies, and deletion anomalies.
   (c) Decompose the relation into BCNF.
   (d) Compare how the following updates are done (in SQL) before and after decomposition:
      i. Changing the name of a street.
      ii. Changing the area code corresponding to a zip code.
      iii. Delete all people from a specific state. (You probably don't know enough SQL to do this, but consider how the relation(s) must be updated.)

3. Problem 2.a from the trial exam, December 2003 (available on the course home page).

To be handed in no later than October 8, 1 PM:

Problem 4 from the exam, January 2004, available on the course home page under "useful links", or directly at: `http://www.itu.dk/people/pagh/IDB04/exam.pdf`

Note that the hand-in must be completed individually.